In the Claims:

1 – 159. (Cancelled)

160. (New) An array of transfected eukaryotic cells comprising a surface having an array of at least 100 locations per square centimeter, wherein each location comprises eukaryotic cells that are transfected with one or more defined nucleic acid molecules.

161. (New) The array of claim 160, wherein the one or more defined nucleic acid molecules are non-viral.

162. (New) The array of claim 160, wherein, in at least one location, the one or more defined nucleic acid molecules are contained in a vector.

163. The array of claim 160, wherein, in at least one location, the one or more defined nucleic acid molecules are expressed in the eukaryotic cells.

164. (New) The array of claim 160, wherein, in at least one location, the one or more defined nucleic acid molecules encode polypeptides that are expressed in the eukaryotic cells.

165. (New) The array of claim 160, wherein the cells are disposed on the surface at a density of $0.3 \times 10^5/cm^2$ to $3.0 \times 10^5/cm^2$.

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166. (New) The array of claim 160, wherein, in at least one location, the one or more defined nucleic acid molecules are DNA.

167. (New) The array of claim 160, wherein, in at least one location, the eukaryotic cells are transfected with at least two different nucleic acid molecules.

168. (New) The array of claim 160, wherein the locations have a density of at least 1000 different locations per square centimeter.

169. (New) The array of claim 168, wherein the locations have a density of at least 10,000 different locations per square centimeter.

170. (New) The array of claim 168, wherein the locations have a density of at least 100,000 different locations per square centimeter.

171. (New) The array of claim 168, wherein the locations have a density of at least 400 different locations per square centimeter.

172. (New) The array of claim 168, wherein the locations have a density of at least 700 different locations per square centimeter.

173. (New) The array of claim 168, wherein the locations have a density of at least 289 different locations per square centimeter.

174. (New) The array of claim 168, wherein the locations have a density of at least 625 different locations per square centimeter.

175. (New) The array of any of claims 160 and 168-174, wherein the locations have a density of at most 1,000,000 different locations per square centimeter.

176. (New) The array of claim 160, wherein, in at least one location, the one or more defined nucleic acid molecules encode a double-stranded RNA molecule.

177. (New) The array of claim 160, wherein, in at least one location, the one or more defined nucleic acid molecules has a modified base or backbone.

178. (New) An array of nucleic acid molecules comprising a surface having an array of at least 100 features per square centimeter, wherein each feature comprises one or more defined nucleic acid molecules non-covalently affixed to the surface, wherein the one or more defined nucleic acid molecules are capable of being transfected into a eukaryotic cell under appropriate conditions.

179. (New) The array of claim 178, further comprising eukaryotic cells disposed on the surface and capable of being transfected by the one or more defined nucleic acid molecules of at least one feature under appropriate conditions.

180. (New) The array of claim 178, wherein the cells are disposed on the surface at a density of $0.3 \times 10^5/cm^2$ to $3.0 \times 10^5/cm^2$.

181. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules affixed to the surface are admixed with a carrier.

182. (New) The array of claim 181, wherein the carrier is a gelatin.

183. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules are non-viral.

184. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules are contained in a vector.

185. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules are capable of being expressed in eukaryotic cells.

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186. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules encode polypeptides when transfected into eukaryotic cells.

187. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules are DNA.

188. (New) The array of claim 187, wherein the concentration of the DNA on the surface is 0.01 µg/µl to 0.5 µg/µl.

189. (New) The array of claim 188, wherein the concentration of the DNA on the surface is 0.02 µg/µl to 0.1 µg/µl.

190. (New) The array of claim 187, wherein the concentration of the DNA on the surface is 0.1 µg/µl to 2.0 µg/µl.

191. (New) The array of claim 178, wherein at least one feature comprises at least two different nucleic acid molecules.

192. (New) The array of claim 178, wherein the features have a density of at least 1000 different features per square centimeter.

193. (New) The array of claim 192, wherein the features have a density of at least 10,000 different features per square centimeter.

194. (New) The array of claim 192, wherein the features have a density of at least 100,000 different features per square centimeter.

195. The array of claim 192, wherein the features have a density of at least 400 different features per square centimeter.

196. (New) The array of claim 192, wherein the features have a density of at least 700 different features per square centimeter.

197. (New) The array of claim 192, wherein the features have a density of at least 289 different features per square centimeter.

198. (New) The array of claim 192, wherein the features have a density of at least 625 different features per square centimeter.

199. (New) The array of any of claims 178 and 192-198, wherein the features have a density of at most 1,000,000 different features per square centimeter.

200. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules encode a double-stranded RNA molecule.

201. (New) The array of claim 178, wherein, in at least one feature, the one or more defined nucleic acid molecules has a modified base or backbone.

202. A method of forming an array of transfected eukaryotic cells comprising:

(a) providing a surface having an array of features, wherein each feature comprises one or more defined nucleic acid molecules non-covalently affixed to the surface;

(b) contacting the surface with eukaryotic cells; and

(c) transfecting the one or more defined nucleic acid molecules into the eukaryotic cells to form the array of transfected eukaryotic cells.

203. (New) The method of claim 202, wherein, in step (b), the cells are contacted with the surface at a density of $0.3 \times 10^5/cm^2$ to $3.0 \times 10^5/cm^2$.

204. (New) The method of claim 202, wherein, in at least one feature, the one or more defined nucleic acid molecules affixed to the surface are admixed with a carrier.

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205. (New) The method of claim 202, wherein the carrier is a gelatin.

206. (New) The method of claim 202, wherein the carrier is present at a concentration of from 0.05% to 0.5%.

207. (New) The method of claim 202, wherein the carrier is present at a concentration of from 0.1% to 0.2%.

208. (New) The method of claim 202, wherein, in at least one feature, the one or more defined nucleic acid molecules are non-viral.

209. (New) The method of claim 202, wherein, in at least one feature, the one or more defined nucleic acid molecules are contained in a vector.

210. (New) The method of claim 202, wherein the one or more defined nucleic acid molecules of at least one feature are expressed in the transfected eukaryotic cells.

211. (New) The method of claim 202, wherein the one or more defined nucleic acid molecules of least one feature encode polypeptides that are expressed in the transfected eukaryotic cells.

212. (New) The method of claim 202, wherein, in at least one feature, the one or more defined nucleic acid molecules are DNA.

213. (New) The method of claim 212, wherein the concentration of the DNA on the surface is 0.01 µg/µl to 0.5 µg/µl.

214. (New) The method of claim 213, wherein the concentration of the DNA on the surface is 0.02 µg/µl to 0.1 µg/µl.

215. (New) The method of claim 212, wherein the concentration of the DNA on the surface is 0.1 µg/µl to 2.0 µg/µl.

216. (New) The method of claim 202, wherein at least one of the features comprises at least two different nucleic acid molecules.

217. (New) The method of claim 202, wherein, in the array of step (a), the features have a density of at least 1000 different features per square centimeter.

218. (New) The method of claim 217, wherein the features have a density of at least 10,000 different features per square centimeter.

219. (New) The method of claim 217, wherein the features have a density of at least 100,000 different features per square centimeter.

220. (New) The method of claim 217, wherein the features have a density of at least 400 different features per square centimeter.

221. (New) The method of claim 217, wherein the features have a density of at least 700 different features per square centimeter.

222. (New) The method of claim 217 wherein the features have a density of at least 289 different features per square centimeter.

223. (New) The method of claim 217, wherein the features have a density of at least 625 different features per square centimeter.

224. (New) The method of any of claims 202 and 217-223, wherein, in the array of step (a), the features have a density of at most 1,000,000 different locations per square centimeter.

225. (New) The method of claim 202, wherein, in at least one feature, the one or more defined nucleic acid molecules encode a double-stranded RNA molecule.

226. (New) The method of claim 202, wherein, in at least one feature, the one or more defined nucleic acid molecules has a modified base or backbone.

227. (New) An array of nucleic acid molecules comprising a surface having an array of at least 100 features per square centimeter, wherein each feature comprises one or more defined nucleic acid molecules reversibly affixed to the surface, wherein the one or more defined nucleic acid molecules are capable of being transfected into a eukaryotic cell under appropriate conditions.

228. (New) The method of claim 227, wherein the features have a density of at least 1000 different features per square centimeter.

229. (New) The method of claim 227, wherein the features have a density of at least 10,000 different features per square centimeter.

230. (New) The method of claim 227, wherein the features have a density of at least 100,000 different features per square centimeter.

231. (New) The method of claim 227, wherein the features have a density of at least 400 different features per square centimeter.

232. (New) The method of claim 227, wherein the features have a density of at least 700 different features per square centimeter.

233. (New) The method of claim 227 wherein the features have a density of at least 289 different features per square centimeter.

234. (New) The method of claim 227, wherein the features have a density of at least 625 different features per square centimeter.

235. (New) The method of any of claims 227-234, wherein the features have a density of at most 1,000,000 different features per square centimeter.

236. (New) A method of forming an array of transfected eukaryotic cells comprising:

(a) providing a surface having an array of features, wherein each feature comprises one or more defined nucleic acid molecules reversibly affixed to the surface;

(b) contacting the surface with eukaryotic cells; and

(c) transfecting the one or more defined nucleic acid molecules into the eukaryotic cells to form the array of transfected eukaryotic cells.